FIELD SUMMARY REPORT

I. INTRODUCTION

A. The purpose of the study was to ground truth the various wetland habitats within the following 1:100,000 scale maps:

St. John's SW	Prescott NE
Holbrook SE	Williams SE
Holbrook NE	Flagstaff SE
Holbrook SW	Flagstaff SW
Holbrook NW	Flagstaff NW

B. The following is a list of 7.5' quadrangle maps which contain checksites obtained during field reconnaissance August 28, 1988 through September 9, 1988.

Mount Josh	Parks
Iron Springs	Bellmont
Prescott	Flagstaff West
Chino Valley North	Grand Falls
Prescott Valley South	Winslow
Perkinsville	Chevelon Crossing
Clarkdale	Greer
Seligan West	Eagar
Taylor	Pine
Lake Montezuma	Kehl Ridge
Payson South	Dane Canyon

The following are 15' quadrangle maps with checksites.

Bill Williams Mountain
Cameron
Woods Canyon

C. Personnel

Curtis Carley	USFWS
Donley Kisner	Geonex Martel
Chip Messenkopf	Geonex Martel

D. Dates of Field Trip

August 28, 1988 - September 9, 1988

E. Available Photography

1. Dates for the ten 1:100,000 scale maps

06/80	05/81	05/82	06/83	06/84
07/80	06/81		07/83	09/84
09/80				
10/80				

F. Collateral Data

1. USGS 7.5' and 15' topographic maps. Classification of Wetlands and Deepwater Habitats of the United States, Cowardin, et al. 1977.

2. Description of the Ecoregions of the United States, Bailey, 1980.

II. OVERVIEW

The northern and eastern parts of the study area falls within the Colorado Plateau Province, according to Bailey's Description of the Ecoregions of the United States. The area consists of tablelands having moderate to considerable relief. Elevations of the plateau tops range from 5,000 to 7,000 feet. Local relief is from 500 feet to more than 3,000 feet in some of the deeper canyons that dissect these surfaces. In some sections, volcanic mountains rise 1000 to 3000 feet above the plateau surface. Stream valleys are narrow and widely spaced.

Because of the high altitude, the climate is characterized by cold winters. Summer days are usually hot but nights are cool. Annual average temperatures are 40 to 55 degrees Fahrenheit and decreases as the altitude increases. Average annual precipitation is about 20 inches, except on the higher mountains. Some parts of the province receive less than 10 inches. Summer rains are thunderstorms but ordinary rains come in winter.

Vegetational zones are conspicuous but are not uniform over the whole province. The lowest zone is covered by arid grasses. Xeric shrubs often grow in open stands among the grasses. The woodland zone is very extensive. It is dominated by open stands of pinyon pine and several species of juniper. The mountane zone extends over considerable areas on the high plateau and mountains. Ponderosa pine and Douglas fir dominate here.

Entisols occur along the floodplains of major streams and aridisols occupy the plateau tops, older terraces and alluvial fans.

The southern and western parts of the study area falls within the Upper Gila Mountains Forest Province. This area consists mostly of steep foothills and mountains but includes some deeply dissected high plateaus. Elevations range from 4,500 to 10,000 feet with some mountain peaks above 12,000 feet (San Francisco Peak). In many areas the relief is higher than 3,000 feet. Isolated volcanic peaks rise to considerable heights in some areas. Many streams flow year-round but water volume fluctuates considerably.

The climate varies considerably with altitude. Average annual precipitation ranges from 10 to 35 inches, increasing with rising elevation. Summer rains are of the thunderstorm variety with more normal rainfall in early autumn and winter. In the mountains, most of the precipitation is snow. Average annual temperature is about 55° F in the lower foothills and 40° F on the upper mountain slopes.

Vegetation varies greatly with elevation. The foothill zone has mixed grasses, chaparral brush, oak-juniper woodland and pinyon-juniper woodland. At about 7,000 feet, open forests of ponderosa pine are found with pinyon-juniper on south facing slopes. Douglas fir becomes dominant as elevation increases.

The subalpine zone is characterized by an abundance of Englemann spruce and subalpine fir. On San Francisco Mountain, one finds bristlecone pine in association with spruce. Since only a few isolated mountains rise above timberline, the alpine zone is not extensive.

Detailed information about soils is lacking for much of this area.

III. BIOLOGICAL CHARACTERISTICS AND THEIR CLASSIFICATION

A. Systems

1. Marine System

None

2. Estuarine System

None

3. **Riverine System**

This system is represented by the following subsystems and classes.

Upper Perennial (R3)
- Unconsolidated Bottom (UB)
- Unconsolidated Shore (US)

Lower Perennial (R2)
- Unconsolidated Bottom (UB)
- Unconsolidated Shore (US)

Intermittent (R4)
- Streambed (SB)

The Riverine subsystem most frequently encountered in the study area is Intermittent (R4). Three water regimes will be used: "J" (intermittently flooded), "A" (temporarily flooded), and "C" (seasonally flooded). Less frequently encountered Riverine subsystems are the upper perennial (R3) and lower perennial (R2). The main channel of the river will always be given the water regime "H" (permanently flooded). River flats or sand bars will be given the "A" or "C" water regime.

Many rivers within the study area will remain in one subsystem for their entirety while others may change so in physical characteristics that it is necessary to use all three subsystems at some time along its course. One example is the Little Colorado River which starts out high in the mountains of Sitgreaves National Forest as an R3. Later, when it reaches lower elevations and more gentle relief, it becomes R2. Then as the river continues into even lower elevations and drier climate conditions it becomes an R4.

All possible riverine determinations including system, subsystem class and water regime are as follows:

R3UBH	R3USC	R3USA
R2UBH	R2USC	R2USA
R4SBC	R4SBA	R4SBJ

The artificial modifier "x" (excavated) can appear on any of the above labels if the system is man-made but is much more common with the subsystem (4). Example: R4SBAx.

4. **Lacustrine System**

This system is represented by the following subsystems, classes and subclasses:

Limnetic (L1)
- Unconsolidated Bottom (UB)
- Aquatic Bed (AB)
  - Floating (4)

Littoral (L2)
- Unconsolidated Bottom (UB)
- Unconsolidated Shore (US)
- Aquatic Bed (AB)
  - Rooted Vascular (3)
  - Floating (4)

Lacustrine wetlands, both natural and manmade, occur throughout the study area. In general, natural occurring systems will be flooded for long durations, if not permanently in higher elevations while as one goes lower in elevation these systems will be flooded more infrequently. Manmade lacustrine systems do not follow the general pattern due to the many manipulations possible in such a system. The vegetative type found and identified within this system is aquatic bed. Four different plants were observed in the field: smartweed (Polygonum amphibium and Polygonum coccineum), Duckweed (Lemna spp.) and Pondweed (Potamogeton graminus).

All possible lacustrine determinations including system, subsystem, subclass and water regime are as follows:

L1UBH, L1AB4H, L2UBH, L2UBF, L2AB3F, L2AB3H, L2USC, L2USA, L2USJ.

Artificial modifiers "h" (dike or impounded) and "x" (excavated) will appear with the above labels if the system is manmade.

5. **Palustrine**

This system is represented by the following classes and subclasses:

Emergent (EM)
- persistent (1)

Scrub Shrub (SS) and Forested (FO)
- Broad-leaved deciduous (1)
- Needle-leaved deciduous (2)

Aquatic Bed (AB)
- Rooted Vascular (3)
- Floating (4)

Unconsolidated Shore (US)
Unconsolidated Bottom (UB)

Palustrine emergent areas are numerous and found throughout the study area, either bordering open water bodies or standing alone in isolated polygon and linear type situations. Some emergent areas are found on slopes. These are determined to be saturated wetlands in which water is rarely, if ever, above the surface but due to a high water table the soil is saturated for extended periods. These wetlands are generally found in higher elevations and in association with seeps and springs. The following is a list of emergent plants commonly observed in the field.

Saltgrass	Distichlis spicata
Dock	Rumex mexicanus
Smartweeds	Polygonum pennsylvanicum
Rush	Juncus spp.
Spike rush	Eleocharis spp.
Sedges	Carex spp.
Cattail	Typha latifolia
Hardstem bulrush	Scirpus acutus

Palustrine aquatic beds are the same biologically as lacustrine aquatic beds. It has previously been established that all aquatic bed areas over 20 acres will be lacustrine and those under 20 acres will be palustrine.

Palustrine unconsolidated shore and unconsolidated bottom will be used to classify small lakes and ponds. These are quite numerous throughout the study area. Manmade farm ponds will be classified in the same way and given the impounded or excavated modifiers.

All possible Palustrine determinations including system, class, subclass and water regime are as follows:

PEM1A, PEM1C, PEM1B, PEM1F
PSS1J, PSS1A, PSS1C, PSS2J, PSS2A
PFO1J, PFO1A, PFO1C
PAB3F, PAB3H, PAB4H, PAB4H
PUSJ, PUSA, PUSC
PUBF, PUBH

Any of the above labels may also contain the "h" and "x" modifiers.

Palustrine scrub shrub and forested areas are most commonly located along rivers, streams and lakes. This woody vegetation is commonly found in pure stands but it can also be observed in mixed communities.

It will vary from a narrow line of vegetation along a stream to a broad exchange on a floodplain. The following is a list of shrubs and trees commonly observed in the field.

Arizona alder	Alnus oblongifolia
Willow	Salix spp.
Saltcedar	Tamerisk chenensis
Cottonwood	Populus spp.
Arizona sycamore	Plantanus wrightii
Arizona walnut	Juglans major
Velvet ash	Fraxinus spp.

IV. IMAGERY

The general overall quality of the imagery is good. Emulsion is very inconsistent but field reconnaissance allowed for the collection of enough collateral information to work through the problems of changing photo signatures due to differing emulsions. Photography dates offer the greatest challenge for interpretation consistency. The 1980 and 1981 photography was taken during and shortly after an extremely wet period. With the aid of field notes and field checksites it will be possible to compensate for this wetter photography and maintain consistency with the remaining photography that reflects more normal conditions. When possible, adjacent photos of different dates were used to overlap and help express the more normal conditions for interpretation.

V. ARIZONA RIPARIAN STUDY

Two days of the Mogollon Rim field trip were spent working with personnel from the Arizona Riparian Council - Bill Bayham, Dennis Haywood and Chuck Hunter. The council had previously picked six 7/5' quadrangle maps to be used for, among other things, a pilot mapping project. The quads are Artesia, Safford, Mt. Graham, Thatcher, Shingle Mountain and Webb Peak. During this time we discussed the possible ways of mapping riparian habitats in conjunction with the NWI maps. In addition, we were checking photo signatures with on-site riparian habitats to determine the extent which we could map these habitats based on the limitations of the photography. We decided to map the following types of vegetation: mesquite, saltcedar, cottonwoods, mixed broadleaf – including sycamore, arizona walnut, ash, etc., and xeric – including paloverde, saltbush, cresote bush, etc. Generally, these vegetation types are found isolated from each other, the main exception being mesquite and saltcedar which are sometimes found either mixed or side-by-side along the drainages.

Also in the field we developed a classification system to be used for the riparian mapping. It is as follows:

- Rp - riparian
  - FO - forested
  - SS - scrub/shrub
    - MQ - mesquite
    - CW - cottonwood
    - SC - salt cedar
    - MB - mixed broadleaf
    - XE - xeric

This classification system is used in conjunction with the NWI classification system. Some labels will be riparian only (ex: RpSSMQ), some labels will be a combination of the riparian and NWI classification (ex: R4SBA [RpSSMQ]) and other labels will be NWI only (ex: R4SBA).

The only problem foreseen during field reconnaissance deals with photo emulsion. Some frames of photography have a very dark emulsion making it difficult to differentiate between mesquite and saltcedar. The other vegetative types are not affected by this emulsion problem.

VI. UPDATE

On December 2, 1988 the Arizona Riparian Council held its annual meeting in which I, Donley Kisner, was in attendance. During the meeting the photo emulsion problem was discussed and it was decided to add an additional category (UD) for undetermined. This undetermined label, used only when emulsion is a problem, will always indicate the presence of either mesquite and/or salt cedar. The other decision affecting the mapping of riparian habitats is the inclusion of juniper as riparian species when in concentration along drainages. Juniper will be labeled (JU).